

1. A surgical instrument system for use in surgical procedures, said surgical instrument system including:

a guide assembly including an elongated portion having a central axis of rotation, and a distal end that is positioned a radial distance away from the central axis;

a surgical tip assembly that may be attached to said guide assembly; and

a drive unit coupled to said guide assembly for rotating said guide assembly and thereby rotating said surgical tip with respect to the central axis.

2. The surgical system as claimed in claim 1, wherein said guide assembly includes a guide tube that is curved at its distal end.

3. The surgical system as claimed in claim 2, wherein said surgical tip assembly is at least partially insertable into said guide tube.

4. The surgical system as claimed in claim 1, wherein said surgical tip provides at least three degrees of freedom.

5. The surgical system as claimed in claim 1, wherein said guide assembly and said tip assembly are coupled to a drive unit.

6. The surgical system as claimed in claim 1, wherein said surgical tip assembly includes an end effector having opposing grip portions.

1 7. A surgical instrument system for use in surgical procedures, said surgical instrument
2 system including:

3 a guide assembly that may be positioned in a surgical environment, said guide assembly
4 including a proximal end and a distal end, and including a central opening along a longitudinal
5 length of said guide assembly, said guide assembly being adapted for insertion into a patient
6 and being adapted for rotation about a longitudinal axis of said guide assembly when inserted
7 into the patient;

8 an end effector that may be used in surgical procedures, and may be received by said
9 proximal end of said guide assembly, passed through said central opening, and to said distal
10 end of said guide assembly within a patient; and

11 a drive unit coupled to said surgical tip assembly for manipulating said surgical tip
12 assembly within the patient.

1 8. The surgical system as claimed in claim 7, wherein said drive unit is further coupled to
2 said guide assembly for rotating said guide assembly and thereby rotating said end effector
3 within the patient.

1 9. The surgical system as claimed in claim 7, wherein said guide assembly includes a
2 guide tube that is curved at its distal end.

1 10. The surgical system as claimed in claim 9, wherein said end effector is at least partially
2 insertable into said guide tube.

1 11. The surgical system as claimed in claim 7, wherein said end effector provides at least

2 three degrees of freedom of movement within the patient.

1 12. The surgical system as claimed in claim 11, wherein said end effector portion includes
2 two opposing gripper portions for use in surgical procedures.

1 13. The surgical system as claimed in claim 7, wherein said drive unit is coupled to a
2 computer processing unit, and wherein said drive unit is adapted to control the movement of
3 said end effector responsive to an automated procedure stored in said computer processing unit.

1 14. The surgical system as claimed in claim 7, wherein said drive unit is detachably coupled
2 to said end effector.

1 15. The surgical system as claimed in claim 7, wherein said drive unit is detachably coupled
2 to said guide assembly.

1 16. The surgical system as claimed in claim 7, wherein said drive unit is further coupled to
2 said guide assembly for rotating said guide assembly and thereby rotating said end effector
3 within the patient, and for sliding said guide assembly along a linear path with respect to the
4 surgical environment.

1 17. A surgical instrument for use in surgical procedures, said surgical instrument
2 comprising:

3 a distal end that is adapted to be inserted into a patient during surgery;

4 a proximal end that is adapted to remain outside of the patient during surgery;

5 a plurality of link members coupled to one another via a plurality of joints that are
6 interposed between adjacent link members, some of said link members being located at the
7 distal end of the instrument, said instrument providing at least five degrees of freedom of
8 movement of said distal portion of said instrument inside of the patient; and

9 drive means for effecting movement of said plurality of said link members about said
10 plurality of joints.

1 18. A surgical instrument for use in surgical procedures, said surgical instrument
2 comprising:

3 a guide assembly including a proximal end and a distal end that is adapted to be inserted
4 into a patient, said guide assembly being adapted to rotate with respect to a longitudinal axis
5 thereof;

6 an end effector for use during surgical procedures, said end effector being separable
7 from and insertable into a patient through said guide assembly; and

8 actuation means for effecting movement of said end effector.

1 19. A surgical instrument as claimed in claim 18, wherein said end effector provides at least
2 three degrees of freedom of movement.

1 20. A surgical instrument as claimed in claim 18, wherein said end effector provides at least
2 four degrees of freedom of movement.

1 21. A surgical instrument for use in surgical procedures, said surgical instrument including
2 a proximal end and a distal end and comprising:

an end effector at the distal end of said surgical instrument, said end effector for use within a patient's body during surgical procedures;

a flexible intermediate portion extending from said distal end to said proximal end; and

a coupling assembly at the proximal end for securing said surgical instrument to an actuation unit within a surgical environment.

22. A method of manipulating a surgical instrument, said method comprising the steps of:

inserting a distal portion of a surgical guide assembly into a patient;

removably securing the surgical guide assembly in a surgical environment;

inserting a surgical tip assembly through the guide assembly; and

actuating a drive unit to effect the manipulating the position of the surgical tip assembly within the patient.

23. The method as claimed in claim 22, wherein said method further includes the step of receiving input signals from a user, and said step of manipulating the position of the surgical tip assembly is responsive to the input signals.

24. The method as claimed in claim 22, wherein said method further includes the step of manipulating the position of the guide assembly.

25. The method as claimed in claim 22, wherein said surgical instrument tip provides at least three degrees of freedom.